



MIAMI-SOUTH FLORIDA

National Weather Service Forecast Office

<http://www.weather.gov/miami>

SOUTH FLORIDA WINTER 2015-2016 RECAP

Wet and Stormy Winter

Record Rainfall at Several Locations

The well-advertised El Niño pattern made its presence felt this winter across south Florida in several ways. One of these is the much-above normal rainfall across the region this winter, particularly in December and January. All observing sites recorded no less than five (5) inches above the normal winter precipitation, with a number of sites in excess of 10 inches above normal (Figure 1). Eight (8) locations in south Florida recorded their wettest winter on record, including Miami, Miami Beach and Moore Haven (see table below for a full list) and several others ranking in the top 5 on record.

Number of days with measureable rainfall was much higher than normal; especially across the east coast metro areas where anywhere from 36 to 43 days of rain were observed compared to the normal of 21 to 23 days. Across the interior and Gulf coast, there were 20 to 26 days with measureable rainfall, more than the normal of 14 to 17.

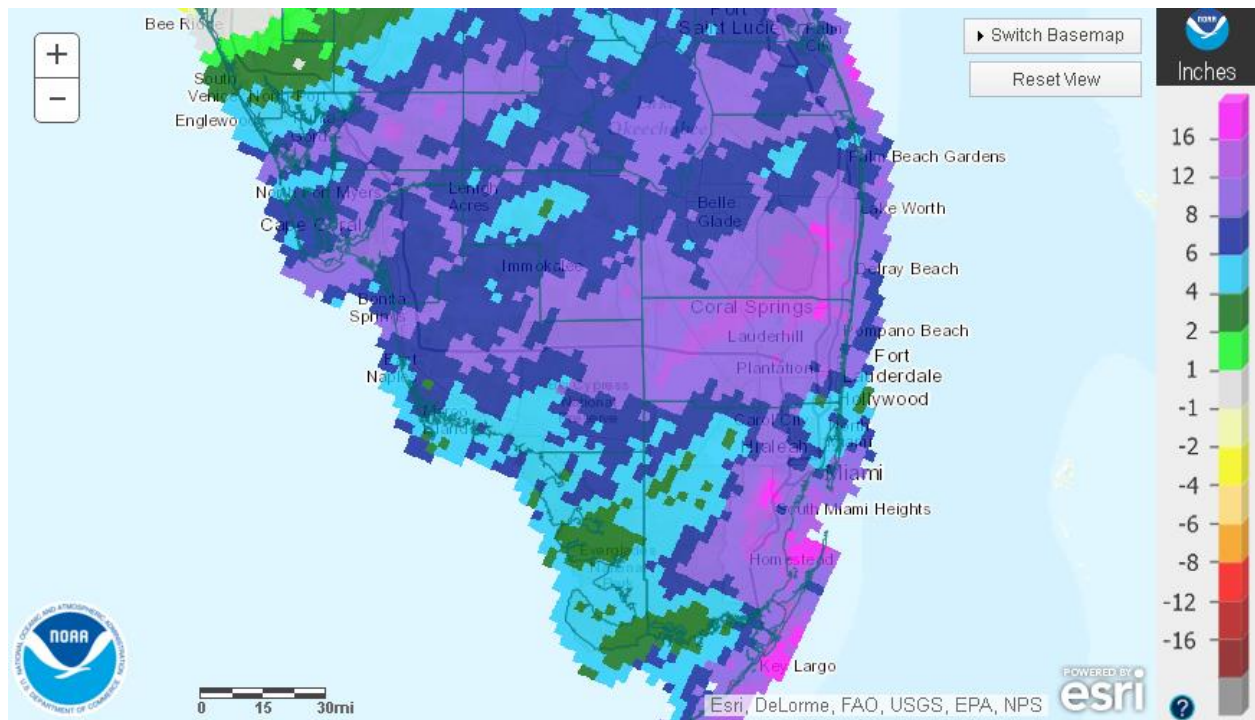


Figure 1: Rainfall departure from normal from December 2015 through February 2016. Most of the area was over 5 inches above normal, and as much as 16 inches above normal in a few spots across southeast Florida.

Another hallmark of the strong El Niño was the marked increase in storminess this winter. A total of seven (7) tornadoes have been preliminarily confirmed across southern Florida, including:

- January 27th EF-1 tornado in northern Broward County affecting Coconut Creek and Pompano Beach
- January 28th EF-0 tornado in southern Palm Beach County affecting Delray Beach and Boynton Beach ([summary of the two January tornadoes](#))
- February 16th EF-1 tornado in northern Broward County affecting Pompano Beach
- February 16th EF-1 tornado in northeastern Miami-Dade County
- February 16th EF-0 tornado in Glades County affecting Moore Haven (this tornado may be upgraded to EF-1 following further analysis)
- February 16th EF-0 tornado in Broward County affecting the Davie area
- February 16th tornado in the Everglades of far eastern Collier County (no rating given)

In addition, on January 17th a line of strong to severe thunderstorms swept across south Florida and [caused extensive tree damage in Naples, Golden Gate and Immokalee](#). Winds with this storm were measured at 84 mph at Naples Municipal Airport and estimated as high as 90 mph in other parts of Collier County.

In addition to the tornadoes and thunderstorms, there were several flood events of note. From December 3rd through the 5th, flooding occurred across much of Miami-Dade County as a result of a stalled front over far southern Florida and the Florida Keys. The most significant flooding was on the 5th when several rounds of very heavy rainfall affected the southern portion of Miami-Dade County. As much as 10 inches of rain fell in the West Kendall area in less than 12 hours, with 6 to 9 inches of rain during that same time period from Kendall to Homestead. Main impacts of the flooding were to streets and agricultural areas. Many streets were impassable into the next day and an estimated 70 to 80 percent of the winter vegetable crop was lost.

Why so much storminess? The strong El Niño pattern this winter led to a southward shift in the jet stream across the southern United States, mainly during January and February (Figure 2, below). This in turn created more opportunities for low pressure storm systems to move across the Florida peninsula from the Gulf of Mexico and is a classic signal during winters with a strong El Niño in place.

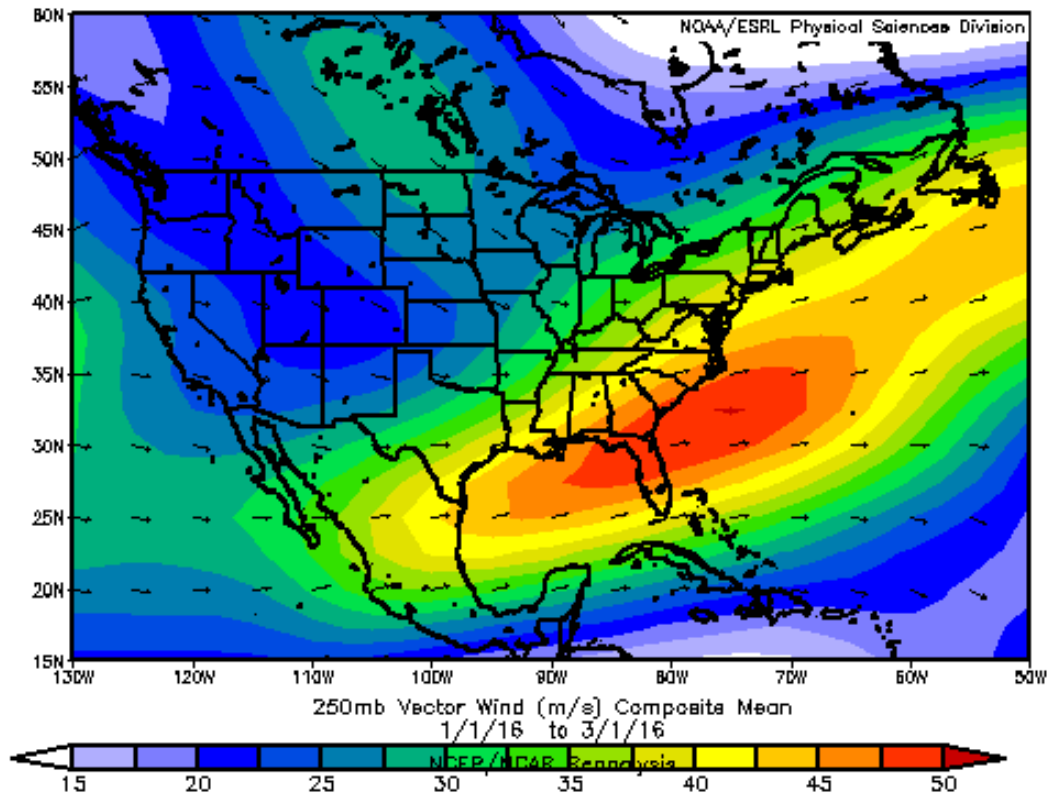


Figure 2: 250 mb (upper tropospheric) mean winds January and February 2016. Dark orange swath represents the mean position of the jet stream during this time period.

Following are December 2015-February 2016 rainfall totals, departure from normal in inches and ranking for selected locations:

Location (Beginning of Period of Record)	Dec 2015-Feb 2016 Rainfall (inches)	Departure from Normal	Rank
Big Cypress	17.18		
Brighton Reservation (Glades Co.)	15.43		
Canal Point (1941)	15.17	+8.73	2 nd wettest
Cape Florida	22.63		
Fort Lauderdale/Hollywood Int'l (1912)	17.07	+8.02	3 rd wettest
Fort Lauderdale Executive Airport	19.72		
Fort Lauderdale Dixie Water Plant	18.49		

Fort Lauderdale Beach	18.93		
Hialeah (1940)	16.98	+10.07	Wettest on rec.
Hollywood (1963)	16.56	+7.51	
Homestead General Airport (1990)	16.88	+11.71	Wettest on rec.
Immokalee (1970)	14.44	+7.99	2 nd wettest
Juno Beach	21.00		
LaBelle (1929)	15.10	+8.95	3 rd wettest
Marco Island	17.10		
Miami Beach (1928)	19.15	+12.68	Wettest on rec.
Miami International Airport (1895)	20.24	+14.33	Wettest on rec.
Moore Haven (1918)	17.47	+11.93	Wettest on rec.
Muse	15.98		
North Miami Beach	19.62		
Naples East/Golden Gate	19.00		
Naples Municipal Airport (1942)	10.34	+4.94	7 th wettest
NWS Miami	21.18		
Oasis Ranger Station (1978)	13.64	+8.46	Wettest on rec.
Opa-Locka Airport	18.11		
Ortona (1940)	17.31	+10.97	Wettest on rec.
Palm Beach Gardens	19.36		
Palm Beach International Airport (1888)	19.90	+10.57	3 rd wettest
Pembroke Pines – North Perry Airport	15.58		
Pompano Beach Airpark	17.48		
Miami Executive Airport – W. Kendall	28.63		
The Redland (1942)	25.07	+18.95	Wettest on rec.
South Bay (15S)	18.75		

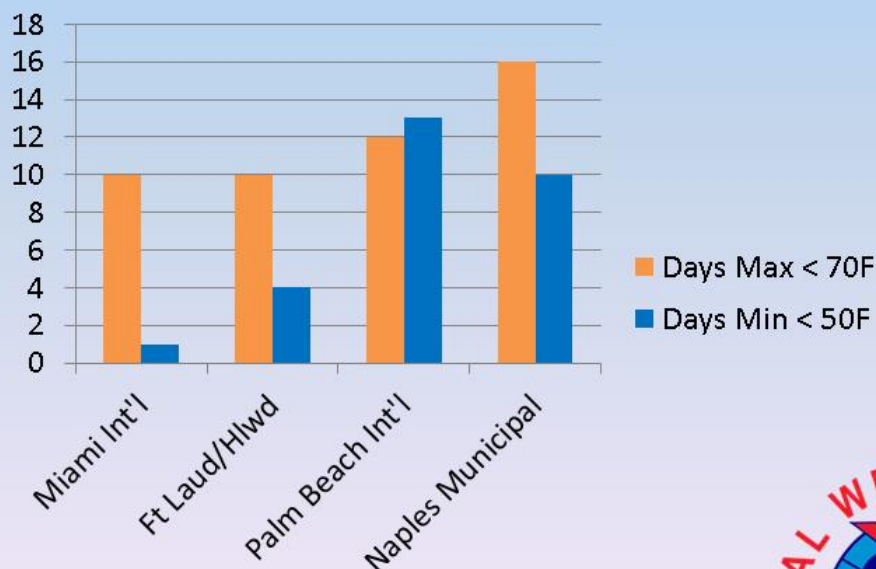
Temperatures

Overall average winter temperatures were above normal, but this was due to the extremely warm and record-breaking December across all of south Florida. January and February temperatures were mostly cooler than normal which is more reflective of the typical El Niño temperature trend. Despite the cooler than normal temperatures, no freezing temperatures were observed at any south Florida official site, which is rare for any given winter season. The coldest observed temperature was 34 degrees in Ortona in southern Glades County on January 25th. The lack of significant cold episodes can be attributed to two main factors: increased cloud cover which kept nighttime temperatures warmer and the source region of the cold air masses this winter which was largely from the Pacific Ocean (instead of Arctic or polar).

The cooler temperatures were most noticeable in the form of daily high temperatures being 1 to 2 degrees below normal in January and 2 to 3 degrees below normal in February. In this case, the increased cloud cover and higher number of rainy days was a key factor in keeping daytime temperatures on the cooler side.

Overall, the number of “cool” days (sum of days in which either the low temperature dropped below 50 degrees or high temperature failed to reach 70 degrees) ranged from 10 days in Miami to 20 in Naples. Individual days of lows below 50 and highs below 70 are indicated in the figure below.

Winter 2015-2016 Number of “Cool” Days



Cool days defined as days with max below 70F and/or min below 50F arbitrarily determined



Figure 3: Number of days of sub-70F degree highs and/or sub-50F degree lows.

Here are average December 2015-February 2016 temperatures, departure from normal in degrees F and top 10 ranking for select locations:

Location (beginning of period of historical record)	Dec 2015-Feb 2016 Avg Temp	Departure From Normal (F)	Rank
Miami (1911)	71.0	+1.4	
Fort Lauderdale (1912)	71.0	+0.7	
West Palm Beach (1888)	69.4	+2.2	
Naples (1942)	68.8	+2.7	T-10th warmest

The coldest and warmest temperatures of the winter season at the main climate sites were:

- **Miami International Airport:** The lowest temperature recorded was 46 degrees on January 25th. The highest temperature was 86 degrees on February 24th.
- **Palm Beach International Airport:** The lowest temperature recorded was 40 degrees on January 24th. The highest temperature recorded was 84 degrees on the following days: December 28, 29, 30 and 31, January 1 and February 24th.
- **Fort Lauderdale/Hollywood International Airport:** The lowest temperature recorded was 44 degrees on January 24th. The highest temperature was 86 degrees on December 18th.
- **Naples Municipal Airport:** The lowest temperature recorded was 43 degrees on February 11th. The highest temperature was a record-breaking 89 degrees on December 25th.

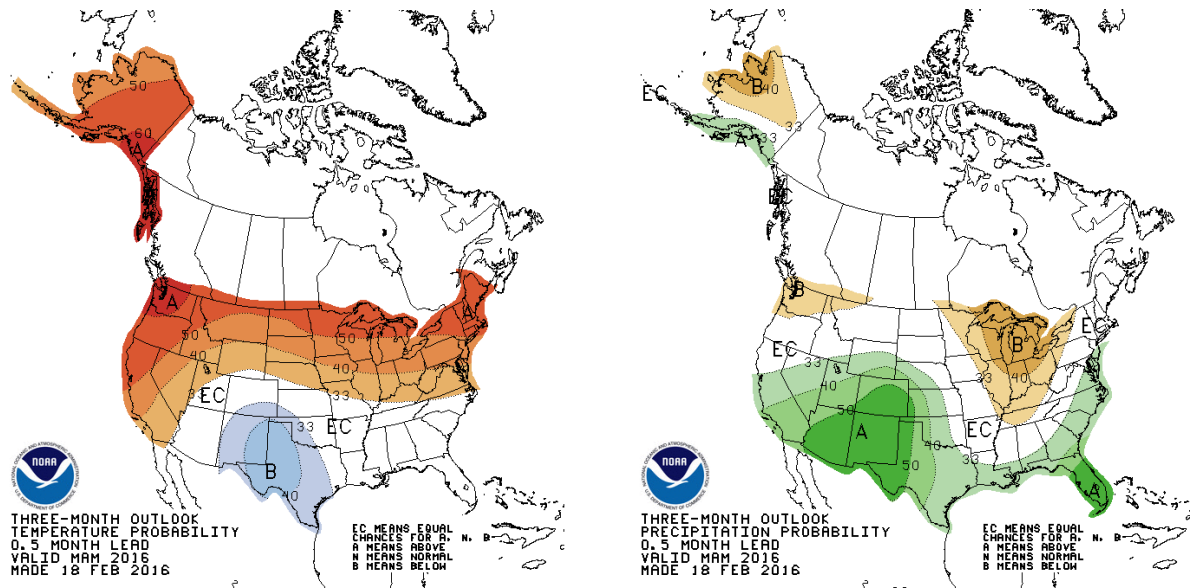
Outlook for March-May

[The outlook by the NOAA Climate Prediction Center](#) for the period from March through May (Figures 4 and 5) calls for equal chances of either cooler, warmer or near-normal temperatures, along with an enhanced likelihood of wetter than normal conditions. Current indications are that the first half of March will be warmer and drier than normal as high pressure dominates the weather pattern over the next week

Despite the currently high groundwater levels and the outlook of wetter than normal conditions, March, April and May mark the typical peak of wildfire season as warmer temperatures can quickly dry out vegetation, especially during periods of little rainfall. All persons are urged to take measures to reduce the chance of wildfires. Visit the [Florida Forest Service web site](#) for more information on how to help prevent wildfires.

March and April also bring an increase in easterly winds to the area along with an increase in beach-goers. This significantly increases the risk of rip currents along the east coast beaches. A sharp increase in rip current-related drowning deaths and rescues occurs during the spring months due in part to this shift in the wind patterns and more people in the water. All residents and visitors visiting area beaches are strongly urged to heed the advice of Ocean Rescue lifeguards and swim near a lifeguard. [Visit the National Weather Service Rip Current Awareness page](#) for more information.

For the latest south Florida weather information, including the latest watches, advisories and warnings, please visit the National Weather Service Miami Forecast Office's web site at weather.gov/southflorida.



Figures 4 and 5: NOAA Climate Prediction Center outlook for March-May.